Attachment A to Resolution No. 2004-XXX

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Los Angeles River and Tributaries Metals TMDL

Proposed for adoption by the California Regional Water Quality Control Board, Los Angeles Region on September 2, 2004.

Amendments:

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Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries, Section 7-13 (Los Angeles River and Tributaries Metals TMDL)

This TMDL was adopted by

The Regional Water Quality Control Board on September 2, 2004.

This TMDL was approved by:

The State Water Resources Control Board on [Insert Date].
The Office of Administrative Law on [Insert Date].
The U.S. Environmental Protection Agency on [Insert Date].

The following table includes the key elements of this TMDL.

Table 7-13.1 Los Angeles River and Tributaries Metals TMDL: Elements

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Problem Statement</td><td>The Regional Board has identified the Los Angeles River and its tributaries as impaired due to copper, cadmium, lead, zinc, aluminum and selenium. However, the TMDL does not address aluminum or selenium. The beneficial uses impaired by metals loadings in the Los Angeles River and its tributaries are those associated with aquatic life and water supply, including wildlife habitat, rare, threatened or endangered species, warm freshwater habitat, wetlands, and groundwater recharge.</td></tr>
<tr><td>Numeric Target
(Interpretation of the numeric water quality objective, used to calculate the waste load allocations)</td><td>The proposed TMDL sets numeric water quality targets based on water quality objectives established by the California Toxics Rule (CTR), which are dependent on the hardness of the receiving water. Separate numeric water quality targets are developed for dry and wet weather because conditions in the Los Angeles River and its tributaries vary between dry and wet weather.

Dry-weather targets are based on chronic or acute criteria, whichever is the most protective, and calculated based on reach specific hardness values, where available. The most protective criteria are the chronic criteria for all metals except zinc. The chronic target is set using the 50th percentile hardness values. The acute target is set using the 10th percentile hardness values.

Dry-weather numeric targets, expressed as dissolved metals (µg/L):
<table>
<tr><th></th><th>Cd</th><th>Cu</th><th>Pb</th><th>Zn</th></tr>
<tr><td>LA Reach 5</td><td>6.2</td><td>29</td><td>11</td><td>379</td></tr>
<tr><td>LA Reach 4 and Tujunga Wash</td><td>4.3</td><td>19</td><td>6.6</td><td>207</td></tr>
<tr><td>LA Reach 3 above LAG WRP</td><td>4.8</td><td>22</td><td>7.6</td><td>239</td></tr>
<tr><td>LA Reach 3 and Arroyo Seco</td><td>4.8</td><td>22</td><td>7.5</td><td>248</td></tr>
<tr><td>Burbank (above Burbank WTP)</td><td>5.4</td><td>25</td><td>8.9</td><td>274</td></tr>
<tr><td>Burbank (below Burbank WTP)</td><td>4.1</td><td>18</td><td>6.1</td><td>208</td></tr>
<tr><td>LA Reach 2</td><td>4.7</td><td>21</td><td>7.3</td><td>229</td></tr>
<tr><td>LA Reach 1</td><td>4.8</td><td>22</td><td>7.6</td><td>228</td></tr>
<tr><td>Compton Creek</td><td>4.1</td><td>18</td><td>6.0</td><td>233</td></tr>
<tr><td>Rio Hondo</td><td>2.9</td><td>12</td><td>3.7</td><td>128</td></tr>
<tr><td>Monrovia Cnyn</td><td>3.9</td><td>17</td><td>5.6</td><td>195</td></tr>
</table>
Wet-weather targets are based on acute CTR criteria and the 50th percentile hardness values from stormwater data collected at the Wardlow gage station.</td></tr>
</table>

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td></td><td>
Wet-weather numeric targets, expressed as dissolved metals (µg/L):
<table>
<tr><th></th><th>Cd</th><th>Cu</th><th>Pb</th><th>Zn</th></tr>
<tr><td>Wardlow</td><td>3</td><td>11</td><td>51</td><td>97</td></tr>
</table>
The numeric targets are expressed in terms of dissolved metals, but the TMDL recognizes the potential for transformation between the total metals measurement and the dissolved metals fraction. For dry-weather conditions, CTR conversion factors are used as default translator values. Site-specific conversion factors are applied downstream of the Tillman and LA-Glendale POTWs based on a copper translator study conducted by Larry Walker and Associates for the City of Los Angeles. For wet-weather conditions, the CTR factors overestimate the dissolved portion of metals. Instead, conversion factors are based on a regression of dissolved metals against total metals based on data collected at Wardlow during wet weather for all metals except cadmium, which is based on the CTR default.
Conversion factors:
<table>
<tr><th></th><th>Dry-weather</th><th>Wet-weather</th></tr>
<tr><td>Cadmium</td><td>0.94</td><td>0.94</td></tr>
<tr><td>Copper*</td><td>0.96</td><td>0.65</td></tr>
<tr><td>Lead</td><td>0.79</td><td>0.82</td></tr>
<tr><td>Zinc</td><td>0.98</td><td>0.61</td></tr>
</table>
*Site-specific translators for copper:
<table>
<tr><td>Tillman:</td><td>0.74</td><td>0.92</td></tr>
<tr><td>LA-Glendale:</td><td>0.80</td><td>0.89</td></tr>
</table>
</td></tr>
<tr><td>Source Analysis</td><td>
There are significant differences in the sources of metals loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works (POTWs) that discharge to the river (Tillman, LA-Glendale, and Burbank) constitute the majority of the flow and metals loadings during dry weather. The storm drains also contribute a large percentage of the loadings during dry weather. Storm drain flows are typically low during dry weather, but concentrations of metals in urban runoff may be quite high. The remaining portion of the dry weather flow and metals loadings represents a combination of tributary flows, groundwater discharge, and flows from permitted NPDES discharges within the watershed.

During wet weather, most of the metals loadings in the Los Angeles River are in the particulate form and are associated with wet-weather stormwater flow. On an annual basis, stormwater contributes about 40% of the cadmium loading, 80% of the copper loading, 95% of the lead loading and 90% of the zinc loading.
</td></tr>
</table>

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td>Loading Capacity</td><td>Separate approaches are taken for determining dry- and wet-weather loading capacities. For dry-weather, the loading capacity is developed by multiplying the reach-specific, hardness-based numeric target by critical dry-weather flows for specific reaches of the Los Angeles River and listed tributaries. In areas with no flow records area-weighted flows are assigned.

During wet weather, the loading capacity is a function of the volume of water in the river. Given the variability in wet-weather flows, the concept of a single critical flow is not appropriate. Instead, a load-duration curve is developed. A calibrated watershed model is used to simulate storm volumes and associated metals loads over a 12-year period. Storm volumes, storm loads, and accumulated rainfall are aggregated over each storm's period. Loading capacities for each storm are then calculated by multiplying the storm volume by the appropriate numeric water quality target. The result is a curve which identifies the flow-weighted load allowance for a given storm volume based on the long-term flow record from the LACDPW station at Wardlow.</td></tr>
<tr><td>Waste Load Allocations (for point sources)</td><td>Waste load allocations are assigned to the Tillman, LA-Glendale, and Burbank POTWs, the MS4 and Caltrans stormwater NPDES permittees, and other NPDES permittees.

Tillman, LA-Glendale, and Burbank POTWs:

For the three POTWs, dry-weather concentration- and mass-based allocations (kg/day) are developed by multiplying the daily and 30-day concentration limits required to meet the in-stream target by the design flow for each plant. The POTW loads will ultimately be limited by the loading capacity, which is a function of the critical flow at Wardlow (145 cfs), which is less than the combined design flow of the three POTWs (169 cfs). As POTW flow increases to the design flow, it will take a greater percentage of the loading capacity.

POTW dry-weather WLAs:
<table>
<tr><th></th><th>Cd</th><th>Cu</th><th>Pb</th><th>Zn</th></tr>
<tr><td>Tillman</td><td></td><td></td><td></td><td></td></tr>
<tr><td>30-day (µg/L)</td><td>4</td><td>18</td><td>5</td><td>103</td></tr>
<tr><td>Mass-based (kg/day)</td><td>1.2</td><td>5.4</td><td>1.5</td><td>31.2</td></tr>
<tr><td>Daily (µg/L)</td><td>7</td><td>27</td><td>12</td><td>207</td></tr>
<tr><td>Mass-based (kg/day)</td><td>2.1</td><td>8.1</td><td>3.6</td><td>62.7</td></tr>
<tr><td>Glendale</td><td></td><td></td><td></td><td></td></tr>
<tr><td>30-day (µg/L)</td><td>4</td><td>17</td><td>5</td><td>187</td></tr>
<tr><td>Mass-based (kg/day)</td><td>0.3</td><td>1.3</td><td>0.4</td><td>14.2</td></tr>
<tr><td>Daily (µg/L)</td><td>8</td><td>31</td><td>14</td><td>247</td></tr>
<tr><td>Mass-based (kg/day)</td><td>0.6</td><td>2.3</td><td>1.1</td><td>18.7</td></tr>
<tr><td>Burbank</td><td></td><td></td><td></td><td></td></tr>
<tr><td>30-day (µg/L)</td><td>3</td><td>12</td><td>4</td><td>156</td></tr>
<tr><td>Mass-based (kg/day)</td><td>0.1</td><td>0.4</td><td>0.1</td><td>5.3</td></tr>
<tr><td>Daily (µg/L)</td><td>8</td><td>26</td><td>11</td><td>207</td></tr>
<tr><td>Mass-based (kg/day)</td><td>0.3</td><td>0.9</td><td>0.4</td><td>7.1</td></tr>
</table></td></tr>
</table>

Element	Key Findings and Regulatory Provisions
	During wet weather, the POTWs shall retain the waste load allocations assigned for dry weather. The concentration-based targets apply but the mass discharge limitation will not apply when in-stream flows exceed the design capacity of the treatment plants. **MS4 and Caltrans Stormwater Permittees:** The dry-weather waste load allocations for the MS4 and Caltrans stormwater permittees are calculated by subtraction after allowing for the POTW loads. They are based on the loads required to meet the in-stream target at the bottom of the watershed (as defined by Wardlow). The allocations for storm water require that water quality standards be met within the receiving water for each of the reaches rather than at the end-of-pipe. **Dry-weather WLAs (kg/day):** **Cd** **Cu** **Pb** **Zn** LA River Reach 6 0.11 0.52 0.20 6.74 LA River Reach 5 0.01 0.05 0.02 0.70 LA River Reach 4 0.05 0.24 0.08 3.20 LA River Reach 3 0.06 0.26 0.09 3.08 LA River Reach 2 0.04 0.20 0.07 2.18 LA River Reach 1 0.13 0.14 0.05 1.45 Bell Creek 0.01 0.04 0.01 0.51 Tujunga Wash <0.01 0.01 <0.01 0.09 Verdugo Wash 0.03 0.15 0.05 1.70 Burbank Channel 0.04 0.18 0.06 1.93 Arroyo Seco 0.01 0.03 0.01 0.33 Rio Hondo <0.01 0.01 <0.01 0.16 Compton Creek 0.01 0.04 0.01 0.51 For wet-weather conditions, a load reduction curve is developed for the MS4 and Caltrans stormwater discharges. Wet-weather waste load allocations for copper, lead, zinc and cadmium are defined as the load capacity curves in attached Figures 7.13.1 - 7.13.4. **Other Permitted Discharges:** The remaining major NPDES discharges, general NPDES discharges, minor NPDES discharges and industrial and construction stormwater NPDES discharges are assigned dry- and wet-weather, concentration-based waste load allocations, based on appropriate numeric targets, expressed as total metals.

<table>
<tr><th>Element</th><th>Key Findings and Regulatory Provisions</th></tr>
<tr><td></td><td>
Dry-weather WLAs for other NPDES permittees, expressed as total metals (µg/L):
<table>
<tr><th></th><th>Cd</th><th>Cu</th><th>Pb</th><th>Zn</th></tr>
<tr><td>LA Reach 5</td><td>6.6</td><td>30</td><td>13.9</td><td>387</td></tr>
<tr><td>LA Reach 4 and Tujunga Wash</td><td>4.6</td><td>21</td><td>8.4</td><td>211</td></tr>
<tr><td>LA Reach 3 above LAG WRP</td><td>5.1</td><td>23</td><td>9.6</td><td>244</td></tr>
<tr><td>LA Reach 3 and Arroyo Seco</td><td>5.1</td><td>25</td><td>9.5</td><td>253</td></tr>
<tr><td>Burbank (above Burbank WTP)</td><td>5.7</td><td>26</td><td>11.3</td><td>280</td></tr>
<tr><td>Burbank (below Burbank WTP)</td><td>4.4</td><td>19</td><td>7.7</td><td>212</td></tr>
<tr><td>LA Reach 2</td><td>5.0</td><td>22</td><td>9.2</td><td>234</td></tr>
<tr><td>LA Reach 1</td><td>5.1</td><td>23</td><td>9.6</td><td>233</td></tr>
<tr><td>Compton Creek</td><td>4.4</td><td>19</td><td>7.6</td><td>238</td></tr>
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</table>
Wet-weather WLAs, expressed as total metals (µg/L):
<table>
<tr><th>Cd</th><th>Cu</th><th>Pb</th><th>Zn</th></tr>
<tr><td>3.2</td><td>17</td><td>62</td><td>159</td></tr>
</table>
</td></tr>
<tr><td>Load Allocations (for nonpoint sources)</td><td>Load allocations are not developed for background or atmospheric deposition. Most of the area in the watershed is covered under the stormwater permit. The areas within the National Park or State Park system that are not covered under the stormwater permit are unlikely to contribute significantly to the overall load. The loadings from open space are also believed to be minor. The loadings associated with indirect deposition are addressed through the stormwater waste load allocations.</td></tr>
<tr><td>Margin of Safety</td><td>There is an implicit margin of safety that stems from the following conservative assumptions: (1) the use of conservative values for the translation from total to the dissolved fraction during the dry and wet periods, (2) the use of a dry-weather critical flow which is less than the combined design flow of the three treatment plants and (3) the wet-weather metals loadings predicted by the model tend to overestimate the actual loadings. Therefore, the estimated percent reduction necessary to meet the waste load allocation is conservative, as quantified in Figures 17-13.1 – 17-13.3.</td></tr>
</table>

Element	Key Findings and Regulatory Provisions
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the City of Long Beach MS4, the Caltrans stormwater permit, major NPDES permits, minor NPDES permits, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. The MS4 and Caltrans stormwater permittees are jointly responsible for meeting the municipal stormwater waste load allocations. Each municipality and permittee will be required to meet in-stream numeric targets at the designated compliance assessment points. A phased implementation approach, using a combination of non-structural and structural best management practices (BMPs) could be used to achieve compliance with the municipal stormwater waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans stormwater permittees must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations in the TMDL. The proposed implementation schedule shall consist of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 15 years, as summarized in Table 7-13.2. The Regional Board intends to reconsider this TMDL in six years after the effective date of the TMDL based on additional data obtained from source characterization studies.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather because conditions in the Los Angeles River watershed vary between dry and wet conditions. For dry-weather, critical flows for each reach are established from the long-term flow records (1988-2000) generated by stream gages located throughout the watershed and in selected reaches. The median flow is selected as the critical flow since most of the flow is from effluent which results in a relatively stable dry-weather flow condition. In areas where there are no flow records, an area-weighted approach is used to assign flows to these reaches. Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation for wet weather varies by storm. Given this variability in stormwater flows, no justification was found for selecting a particular sized storm as the critical condition. The load-duration curves demonstrate that exceedances occur most frequently during large storms (i.e., in excess of 0.5 inches). Therefore, these high magnitude storms represent the critical condition.

Element	Key Findings and Regulatory Provisions
Compliance Monitoring and Special Studies	**Ambient Monitoring** An ambient monitoring program is required to assess water quality throughout the Los Angeles River and its tributaries. The MS4 and Caltrans stormwater NPDES permittees are jointly responsible for implementing the ambient monitoring program. The responsible agencies shall sample for total metals, dissolved metals, and hardness once per month at each ambient monitoring location. There are eight proposed ambient monitoring points on the Los Angeles River: **Ambient Monitoring Points** — **Reaches** White Oak — LA River 6, Aliso Creek, McCoy, Aliso, Bull, Bell Sepulveda — LA River 5, Bull Creek Tujunga — LA River 4, Tujunga Wash Colorado — LA River 3, Burbank Western Channel, Verdugo Wash Figueroa — LA River 3, Arroyo Seco Washington — LA River 2 Rosecrans — LA River 2, Rio Hondo (gage just above Rio Hondo) Willow — LA River 1, Compton Creek (gage at Wardlow) **Compliance Assessment Monitoring** The MS4 and Caltrans stormwater NPDES permittees are jointly responsible for the compliance assessment monitoring for the stormwater waste load allocations. Initially, there will be a single compliance assessment point for stormwater at the Wardlow gage station. However, the co-permittess shall increase the number of compliance monitoring locations to demonstrate compliance with the phased implementation schedule for this TMDL (See Table 7-13.1), which requires compliance in prescribed percentages of the watershed over a 15-year period. The monitoring locations specified for the ambient monitoring program may be used as compliance assessment monitoring locations. The MS4 and Caltrans stormwater NPDES permittees will be found to be in compliance with the TMDL if the in-stream pollutant concentration at the first downstream compliance assessment location is equal to or less than the corresponding concentration- or load-based waste load allocation. Alternatively, compliance with interim compliance targets may be assessed at the storm drain outlet based on the numeric target for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system. This TMDL expresses waste load allocations in terms of loads and concentrations. A review of available water quality data suggests that applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining

Element	Key Findings and Regulatory Provisions
	accurate flow measurements, which are required for calculating loads, the MS4 and Caltrans stormwater NPDES permittees may demonstrate compliance with concentration-based waste load allocations during dry weather. Analysis of randomly selected discrete samples is preferred over time-weighted composite samples, as composite samples may mask episodic exceedances. It is suggested that samples be taken concurrently at all stations on an hourly basis for a 24-hour period. For each sample event, a least four timed sample periods shall be randomly selected. Samples taken from all stations during these time periods shall be analyzed for total metals, dissolved metals and hardness. If exceedances of the waste load allocation occur, samples from subsequent time periods also shall be sampled to quantify the duration of the exceedance. In addition, an investigation shall be conducted in an attempt to identify the source of the exceedance. The MS4 and Caltrans stormwater NPDES permittees shall demonstrate compliance during wet weather based on flow-weighted composite samples taken throughout the duration of a storm event at each compliance assessment monitoring location. Samples shall be collected for six storm events per storm year[1] or all storm events per year, which ever is less. A storm event is defined as a day that rainfall occurs plus all consecutive days that flow is above base flow. Rainfall that occurs following a day of no rainfall, even if flow is still above base flow, is considered a separate storm event. Permittees must report sample results, total storm volume, and total inches of rainfall. Compliance will be based on the load capacity curves for the corresponding rainfall. (See Figures 7-13.1 – 7-13.4.) If the compliance assessment monitoring location exceeds the applicable waste load allocation, then the responsible jurisdictions and agencies within the sub-watershed shall conduct a detailed source investigation of the sub-watershed(s) contributing to the reach where the exceedances occur. The Tillman, LA-Glendale, and Burbank POTWs, and the remaining permitted discharges in the watershed will have effluent monitoring requirements to ensure compliance waste load allocations. Receiving water monitoring requirements in the existing permits will not change as a result of this TMDL. **Special Studies** The implementation schedule (see Table 7-13.2) allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. The Regional Board will re-consider the TMDL in the sixth year after the effective date in light of the findings of these studies. Studies may include: • Refined flow estimates for the Los Angeles River mainstem and tributaries where there presently are no flow gages and

[1] The storm year is defined as November 1st through October 31st.

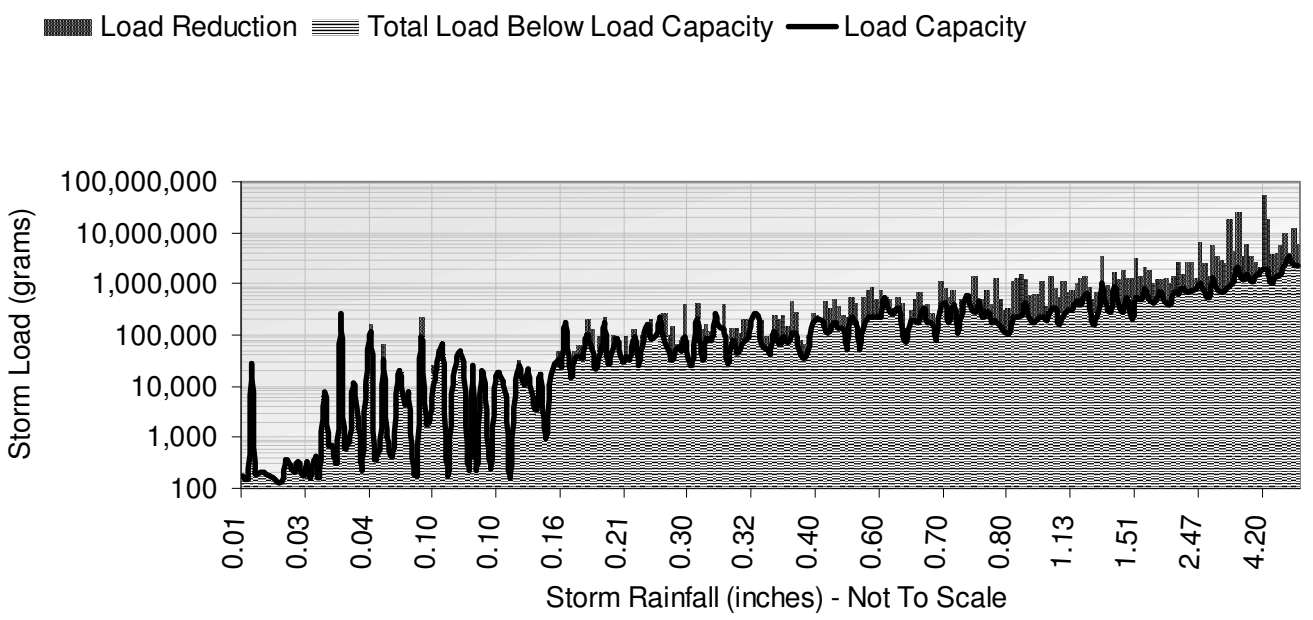
Element	Key Findings and Regulatory Provisions
	improved gaging of low-flow conditions. • Water quality measurements, including a better assessment of hardness, water chemistry data (e.g., total suspended solids and organic carbon) that may refine the use of metals partitioning coefficients. • Effects studies designed to evaluate site-specific toxic effects of metals on the Los Angeles River and its tributaries. • Source studies designed to characterize loadings form background or natural sources • Review of water quality modeling assumptions including the relationship between metals and total suspended solids as expressed in the potency factors and buildup and washoff and transport coefficients.

Note: The complete staff report for the TMDL is available for review upon request.

Table 7-13.2 Los Angeles River and Tributaries Metals TMDL: Implementation Schedule

Date	Action
Effective date of TMDL	Apply wet- and dry-weather waste load allocations to the Tillman, LA-Glendale, and Burbank POTWs, other major NPDES discharges, general NPDES discharges, minor NPDES discharges and industrial and construction stormwater NPDES discharges. Waste load allocations will be implemented through NPDES permit limits at the time of their issuance or reissuance.
120 days after the effective date of the TMDL	The MS4 and Caltrans stormwater NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both compliance assessment monitoring and ambient monitoring. Once the coordinated monitoring plan is approved by the Executive Officer ambient monitoring shall commence.
12 months after effective date of TMDL (Draft Report) 16 months after effective date of TMDL (Final Report)	The MS4 and Caltrans stormwater NPDES permittees shall provide a written report to the Regional Board outlining the drainage areas to be addressed and how these areas will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the compliance monitoring plan.
4 years after effective date of the TMDL	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies conducted as part of the ambient monitoring program.
6 years after effective date of the TMDLs	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations.
6 years after effective date of the TMDL	50% of the total drainage area shall achieve compliance with the dry-weather waste load allocations and 25% of the total drainage area will achieve compliance with the wet-weather waste load allocations assigned to the MS4 system.
8 years after effective date of the TMDL	75% of the total drainage area shall achieve compliance with the dry-weather WLAs assigned to the MS4 system.
10 years after effective date of the TMDL	100% of the total drainage area shall achieve compliance with the dry-weather WLAs and 50% of the total drainage area will achieve compliance with the wet-weather WLAs assigned to the MS4 system.
15 years after effective date of the TMDL	100% of the total drainage area shall achieve compliance with both the dry-weather and wet-weather WLAs assigned to the MS4 system.

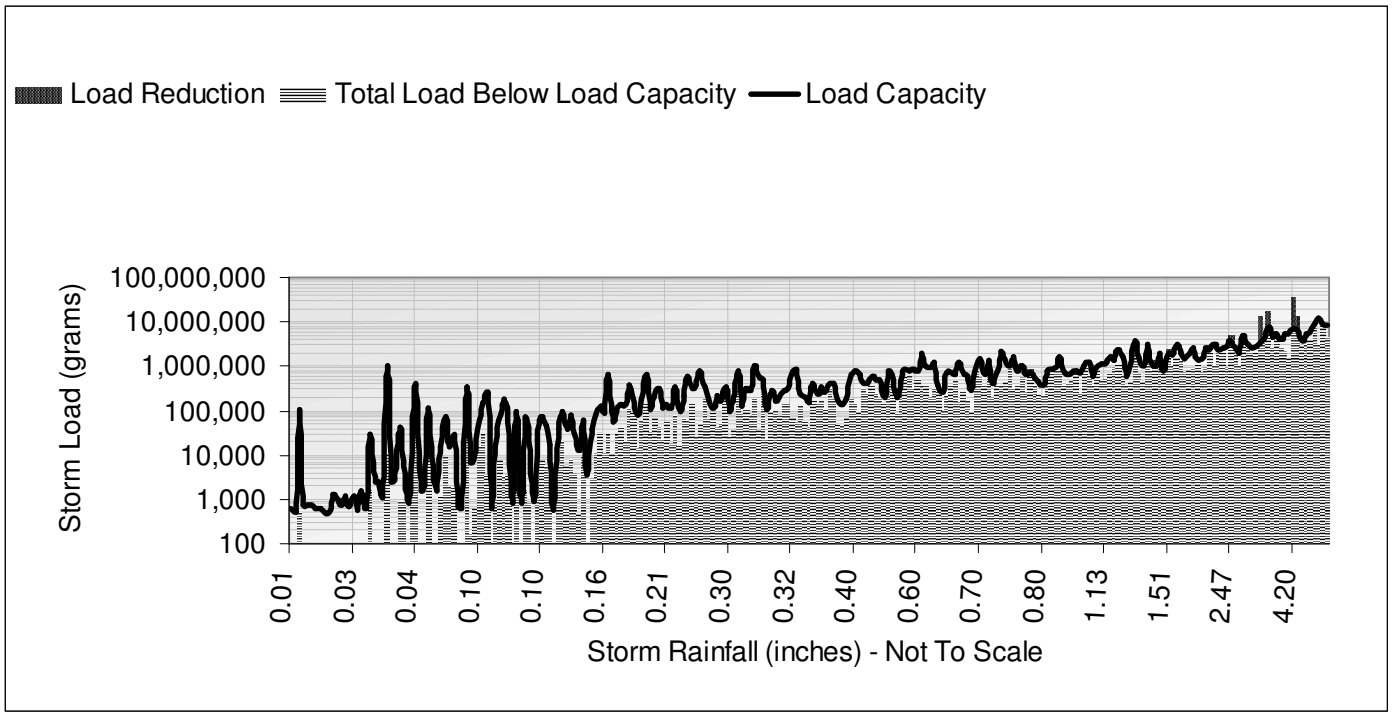
Figure 7-13.1 Los Angeles River and Tributaries Metals TMDL: Load-capacity curve for copper



Computed Load Indicators:	Value	Units
Total Storms Over 12-Year Period	249	none
Total Below Load Capacity Curve:	70,590	kg
Total Existing Load (dots and dashes)	297,889	kg
Existing Load Below Load Capacity Curve (dashes):	69,706	kg
Existing Load Above Load Capacity Curve (dots):	228,183	kg
Estimated Load Reduction*:	76.6%	none

* Model predictions tend to overestimate loadings. Actual reductions required to meet the waste load allocations as defined by the load capacity curve may be less.

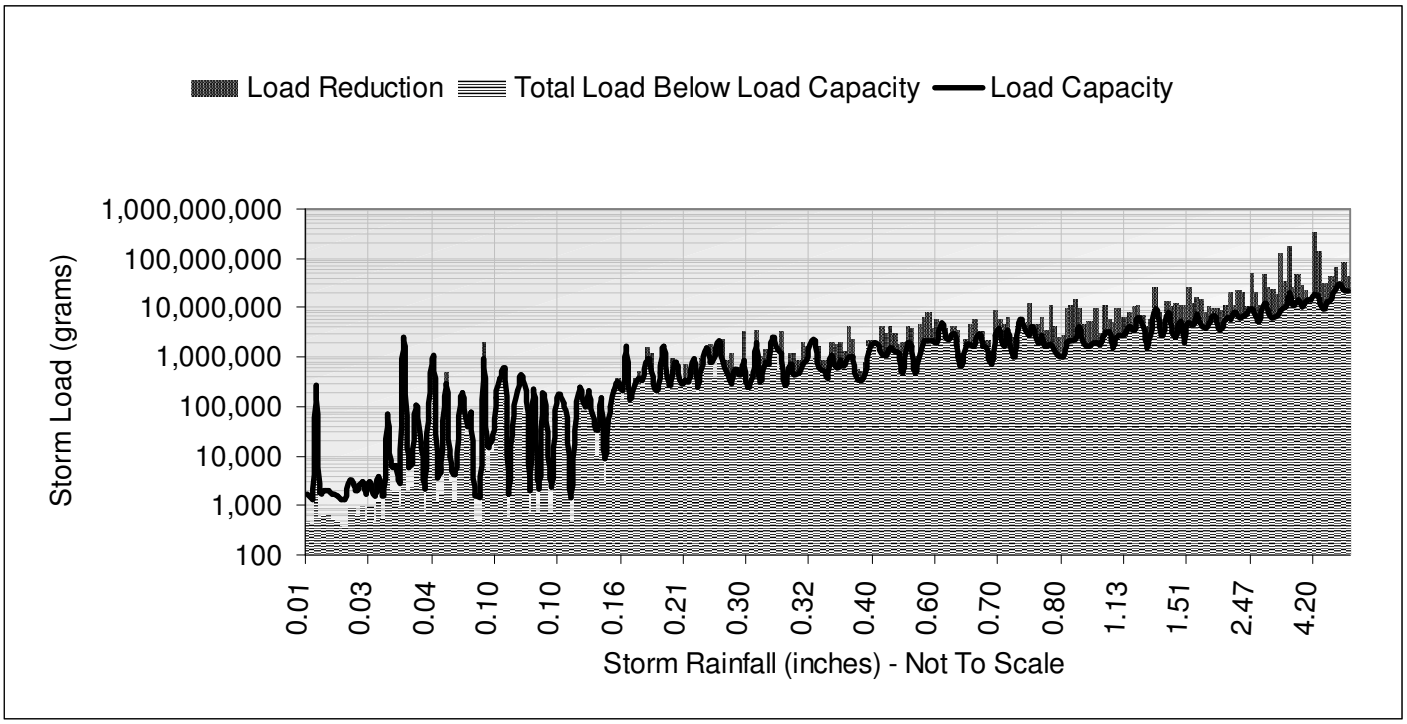
Figure 7-13.2 Los Angeles River and Tributaries Metals TMDL: Load-capacity curve for lead



Computed Load Indicators:	Value	Units
Total Storms Over 12-Year Period	249	none
Total Below Load Capacity Curve:	259,431	kg
Total Existing Load (dots and dashes)	211,484	kg
Existing Load Below Load Capacity Curve (dashes):	153,686	kg
Existing Load Above Load Capacity Curve (dots):	57,797	kg
Estimated Load Reduction*:	27.3%	none

* Model predictions tend to overestimate loadings. Actual reductions required to meet the waste load allocations as defined by the load capacity curve may be less.

Figure 7-13.3 Los Angeles River and Tributaries Metals TMDL: Load-capacity curve for zinc



Computed Load Indicators:	Value	Units
Total Storms Over 12-Year Period	249	none
Total Below Load Capacity Curve:	663,296	kg
Total Existing Load (dots and dashes)	2,208,313	kg
Existing Load Below Load Capacity Curve (dashes):	643,105	kg
Existing Load Above Load Capacity Curve (dots):	1,565,209	kg
Estimated Load Reduction*:	70.9%	none

* Model predictions tend to overestimate loadings. Actual reductions required to meet the waste load allocations as defined by the load capacity curve may be less.

Figure 7-13.4 Los Angeles River and Tributaries Metals TMDL: Load-capacity curve for <u>cadmium</u>